

What is claimed is:

1. An improved ceramic matrix composite laminate comprising:
 - a plurality of preform lamina, each of the preform lamina being formed of directional continuous fiber ceramic fiber in a ceramic matrix;
 - a layer of nonwoven mat including a plurality of chopped ceramic fibers in a ceramic matrix, the nonwoven mat being interposed between adjacent preformed continuous fiber lamina of the plurality of preform lamina to form an interface between the continuous fiber lamina which reduces voids and prevents a continuous, stratified matrix rich layer between adjacent continuous fiber preform lamina; and
 - a matrix of compatible ceramic material infiltrated into the continuous fiber ceramic lamina and the chopped fiber nonwoven mat lamina.
2. The ceramic matrix composite laminate of claim 1 wherein the nonwoven chopped fiber mat prior to being interposed between adjacent continuous fiber preform lamina of the at least two preform lamina is from about 0.001 inches to about 0.25 inches thick.
3. The ceramic matrix composite laminate of claim 2 wherein the nonwoven chopped fiber mat after being interposed between adjacent continuous fiber preform lamina of the at least two preform lamina is from about 0.001 inches to about 0.002 inches thick.
4. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of randomly oriented chopped fibers.
5. The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are less than about one inch in length.
6. The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are ceramic fibers.

7. The ceramic matrix composite laminate of claim 1 wherein the chopped fibers are a plurality of ceramic fiber compositions.
8. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the number of inter-laminar voids.
9. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the size of inter-laminar voids.
10. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina reduces the volume fraction of inter-laminar voids.
11. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat being interposed between adjacent preform lamina of the plurality of preform lamina uniformly distributes the inter-laminar voids.
12. The ceramic matrix composite laminate of claim 1 wherein porosity of the nonwoven mat is from about 50 percent to about 90 percent.
13. The ceramic matrix composite laminate of claim 1 wherein porosity of the nonwoven mat is from about 80 percent to about 90 percent.
14. The ceramic matrix composite laminate of claim 1 wherein the chopped ceramic fibers are from about 0.0004 inches to about 0.0008 inches in diameter.
15. The ceramic matrix composite laminate of claim 1 wherein the chopped ceramic fibers are comprised of SiC.
16. The ceramic matrix composite laminate of claim 1 wherein the ceramic matrix is comprised of SiC.
17. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of different ceramic fiber materials.

18. The ceramic matrix composite laminate of claim 1 wherein the nonwoven mat is comprised of a different material than the plurality of continuous fiber preform lamina.
19. The ceramic matrix composite laminate of claim 1 wherein a plurality of layers of the nonwoven mat is interposed between at least one adjacent continuous fiber preform lamina of the plurality of continuous fiber preform lamina.
20. The ceramic matrix composite laminate of claim 19 wherein at least one layer of the plurality of layers of the nonwoven mat is comprised of a different material than the remaining layers of the plurality of layers of the nonwoven mat.
21. A method for fabricating a ceramic matrix composite laminate characterized by improved interlaminar performance comprising the steps of:
 - providing at least one layer of nonwoven mat including a plurality of chopped ceramic fibers mixed with a bonding agent;
 - providing a plurality of directional, continuous ceramic fiber plies;
 - removing the bonding agent from the nonwoven mat;
 - placing at least one nonwoven mat between each pair of the plurality of directional, continuous ceramic fiber plies so that opposed mat faces interface with a face of each adjacent directional, continuous ceramic fiber ply to form a laminate; and
 - infiltrating the lay-up with a ceramic matrix material compatible with the fibers comprising the ceramic fiber plies and the nonwoven mat so as to at least partially fill voids between the directional, continuous ceramic fiber lamina, forming a ceramic composite laminate having interfaces with interlaminar voids of reduced size.
22. The method of claim 21 including the additional step of compressing the lay-up prior to the step of infiltrating the lay-up.
23. The method of claim 21 including the additional step of compressing the lay-up during the step of infiltrating the lay-up.

24. The method of claim 21 wherein the step of infiltrating the lay-up includes the step of forming a ceramic matrix composite laminate having interfaces with inter-laminar voids of reduced number.
25. The method of claim 21 wherein the step of providing a layer of nonwoven mat includes polyvinyl alcohol as a bonding agent.
26. The method of claim 21 wherein the step of infiltrating the lay-up is a CVI process.
27. A ceramic matrix composite laminate produced by the method of claim 21.